

# Polygraph method in psychological research of human emotions

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## Abstract

The structure and characteristics of human emotional maturity have been studied. It was worked out a program (based on software "Sheriff 7" of polygraph "Barrier-14") for testing a peculiar personal characteristic of juveniles - deceitfulness. Earlier developed diagnostic methods were applied to measure the emotional maturity of a person. The correlation between the emotional maturity of juveniles and their deceitfulness was established using a polygraph method. It was revealed that the low level of emotional maturity corresponds to the weak abilities of juveniles to lie. A research of ethical and social values of contemporary juveniles was undertaken to determine the areas in which the deceitfulness is most pronounced.

*Keywords:* emotional maturity, hide deceitfulness, polygraphs «Barrier-14» («Sheriff 7» software)

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## 1 Introduction

The emotional sphere of juveniles is a subject of numerous researches [1-6]. However this problem is insufficiently studied.

In this work we intend to consider the main factors that determine the level of emotional maturity and to show that this level is linked to the moral values of personality. In addition, we investigated the correlation between the emotional maturity and some specific psychological characteristics of juveniles, for example, such as deceitfulness. The last task is solved using a polygraph with original computer program. The use of the polygraph techniques allows a widening the possibilities of the psycho-diagnostics in modern psychological researches. In particular, using the polygraph technique we can use many indicators for revealing the presence or absence of deceit [7].

There are controversial approaches to the definition of different categories of lies and deception [6 - 9]. We define a deception as a half-truth that can lead to wrong conclusions in the real situation. The deception is simply essentially incomplete information. But the lie is a deliberate distortion of the true information.

There are different approaches to the problem of "emotional maturity", for example simultaneous consideration of emotional maturity and emotional competence [10] or emotional maturity as a manifestation of the social convention [11, 12]. According to the existing models, an emotional maturity is considered as some indicator of «the functioning person» [13]; emotionally mature person is a self-actualizing person [14]; emotionally mature person is represented as an authentic person, as a child or as an adult [15, 16]. Emotionally mature person is sometimes included in trans-personal structures [17, 18].

We proceed from the generalized characteristic of emotional maturity introduced by A. Chebykin and I. Pavlova [4]. They account the degree of the development

of emotional sphere on the whole and the level of the adequacy of emotional response to social and cultural challenges. The main requirements to the emotional maturity are a controlled expression of emotions; an adequate perception of external factors, a deep understanding of the origin of own emotions and emotions of the people around and the use of emotions for the effective communication, a high social sensitivity.

In this work we used a questionnaire «Diagnostics of emotional maturity» worked out by A. Chebykin [4].

One of our tasks was to investigate which values are preferable for students, what are the motivators for their actions and behavior, what do they strike for and what they hide. Than we expected also to clarify how the emotional maturity level of the person influences on the specific psychological characteristics of students. To reach this aim the following tasks were formulated:

1. To determine the hierarchy of moral and ethical values of contemporary juveniles.

- 2 To develop a program for a polygraph research of deceitfulness of individual in the adolescence.

- 3 To investigate the correlation between the peculiarities of emotional maturity and the data of deceitfulness of students.

For students the attitude to the educational process should be the most important moral value that would have prevailed in needs, interests and social expectations.

## 2 The social-morality ideals of students

In this experiment 308 students participated, including 223 girls and 85 boys. The students were asked to answer the appropriate questions. They had to rank six categories of values that were offered. The obtained results are presented in Table 1.

TABLE 1 Prioritization of students' values

Preferable values	% of students
Family	27%
Future employment and income	22%
Friends and communication	17%
Studying	14%
Health	12%
Adherence to social standards	8%

### 3 Results of polygraph research of the tendency to deception among students

As a rule the deceitfulness is manifested in spheres of values that are the most important for a person [8]. We have performed a polygraph test accounting the necessary rules which include, for example: precise statement, maximum of brevity (simple grammatical structure);

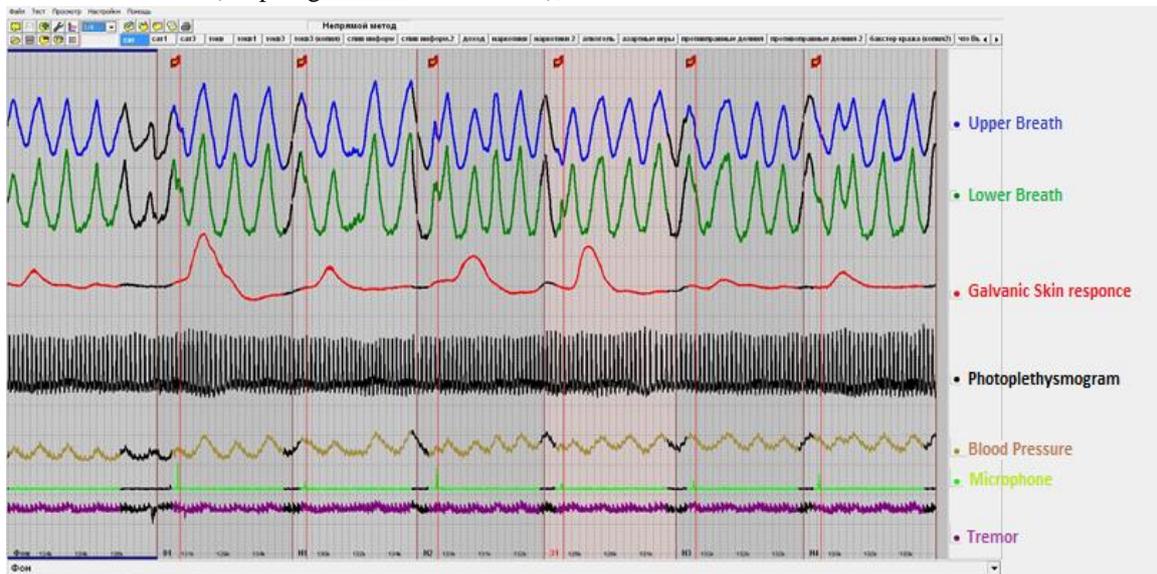


FIGURE 1 Illustration of registration of the physiological parameters with the polygraph "Barrier -14"

The polygraph survey consists of eight test units and 122 questions. 51 questions were focused on deceit detection in the spheres of main values (Table 1) of juveniles.

The polygraph study covered 30 students including 22 girls and 8 boys 19-22 years old. The expert analysis of the obtained data was carried out. According to polygraph survey method we appropriated numerical values to obtained final results.

### 4 Correlation between the indicators of an emotional maturity and the polygraph results

The results showed the correlation between the indicators of an emotional maturity and the polygraph data are presented in Figure 2. We have implemented statistical analysis using average values, mode and median

convenient for pronunciation, correctness in meaning. The test should have only one subject matter, take into account intellectual and education level of a person, and others. Seven physiological parameters (photo-plethysmogram, galvanic skin response, upper breathing, lower breathing, pressure deviation recorder, the resistance to testing, automatic evaluation of person's tension during an hour) are measured by polygraph «Barrier-14». Registration and data handling program «Sheriff 7» has an interface and based on operating systems Windows 98SE, ME, NT 2000, XP. The program allows a sight control of the testing procedure, archiving the test results, performing the comprehensive analysis. During the survey the assessment of the person's characteristics is carried using the polygraph data shown in Figure 1.

estimations, Pearson's (r) coefficients. We used also Student's t-test. As a result the following results were obtained:

- Correlation parameters between an emotional maturity level and the hide deceitfulness:  $r=0,7$ ,  $p<0,01$ . It means that the higher level of emotional maturity leads to the higher level of the hide deceitfulness and vice versa;

- Correlation parameters between the level of emotional self-regulation and the level of the hide deceitfulness:  $r=0,639$ ,  $p<0,01$ . It means that the higher level of emotional self-regulation corresponds to the higher level of the hide deceitfulness and vice versa;

- Correlation parameters between the level of empathy and the level of the hide deceitfulness level:  $r=0,625$ ,  $p<0,01$ . It means that the higher empathy level leads to the higher hide deceitfulness vice versa.

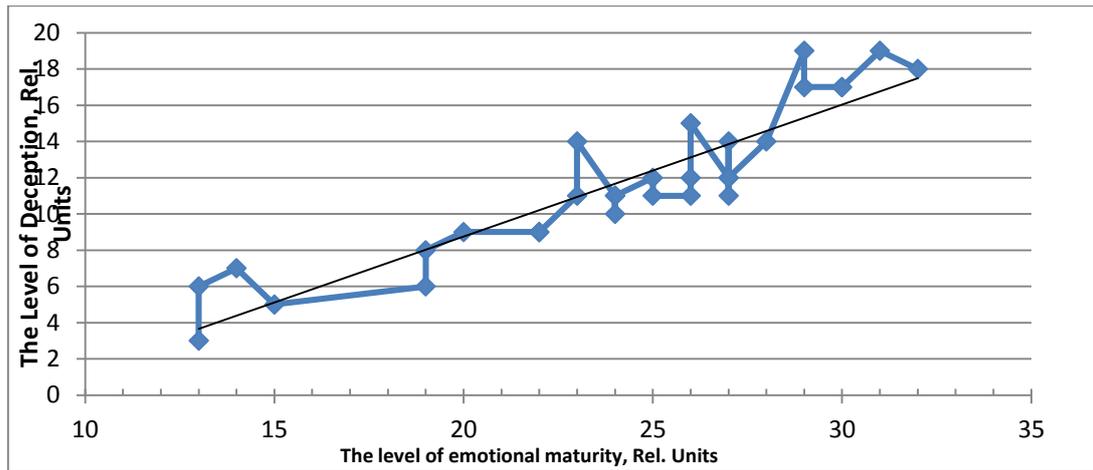


FIGURE 2 Correlation between the level of emotional maturity and the level of deception

Our results showed that a significant basis for diagnosis of deceitfulness is both high average indicators of self-regulation and empathy. This is in consistent with the work [6].

## 5 Conclusions

1. The most important values for modern juveniles are linked to family, further employment and income as well as friends and communication.

2. The important components of emotional maturity are the emotional self-regulation and empathy.

3. Polygraph study of the correlation between the level of the emotional maturity and the hide deceitfulness

showed that the higher level of emotional maturity corresponds to the higher level of hide deceitfulness and also that the higher level of emotional self-regulation corresponds to the higher level of the hide deceitfulness.

4. A significant basis for diagnosis of deceitfulness is both high average indicators of self-regulation and empathy.

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**Scientific interests:** emotional sphere of juveniles; polygraph methods in psychology.